

REMARKS

Applicants amend independent claims 1, 10, and 16. No new matter is added by way of the amended claims, which are fully supported by the specification and drawings. Applicants respectfully request entry of pending claims 1-20, which include the clarifying amendments.

Claim Rejections Under 35 U.S.C. § 102(e)

The Examiner rejected claims 1-3, 7-13, and 16-20 under 35 U.S.C. § 102(e) as being anticipated by Geva (U.S. Patent No. 6,539,541). Applicants respectfully traverse.

Geva teaches that for the purpose of loop unrolling, loop types include counted loops, “while” loops, or speculatively counted loops. Counted loops are classified such that “if the compiler can determine the number of iterations that the loop will execute at compile time, then the number of iterations is a compile time constant.” Column 1, lines 25-35. Thus, the reference teaches identifying loops to help the compiler determine the number of iterations the loop executes at compile time for loop unrolling.

However, Applicants amend the independent claims to recite executing interpreted byte codes and counting the number of times each of the interpreted byte codes is executed. Further, depending on the number of times the interpreted byte codes are executed, a compiler unrolls a loop structure of a computer program to generate a plurality of loop bodies based on the loop structure. The specification at page 10, lines 13-22 and page 11, lines 6-18, fully supports the amended claims. Thus, as contrasted to the reference’s teaching of identifying loops for loop unrolling, the independent claims recite counting a number of times each of the interpreted byte codes is executed to initiate loop unrolling. Accordingly, because the reference does not teach counting byte codes, Applicants respectfully submit that Geva does not anticipate the claimed invention. Further, because dependent claims 2-3, 7-9, 11-13, and 17-20 depend from the allowable independent claims, Applicants respectfully request the withdrawal of the 35 U.S.C. § 102(e) rejection.

Claim Rejections Under 35 U.S.C. § 103(a)

Further, the Examiner rejected claims 4-6, 14, and 15 under 35 U.S.C. § 103(a) as being unpatentable over Geva as applied to claim 1, in view of Srivastava (U.S. Patent No. 5,457,799). Applicants respectfully traverse.

The use of Geva as a primary reference in combination with Srivastava does not render the claimed invention obvious because Geva discloses identifying loops for loop unrolling. Specifically, the reference discloses identifying loops such as “for” loops, “while” loops, and speculatively counted loops. The reference also emphasizes that it is easier to unroll a “for” loop, which has an upper bound, versus a “while” loop, which causes a compiler to generate incorrect code. Accordingly, the reference teaches that “while” loops can be transformed into speculatively counted loops. Column 9, lines 59-67. As disclosed by the reference, “a counted loop allows the compiler the opportunity to further is [sic] optimize the loop in ways that may not be available otherwise.” Column 10, lines 4-6. Thus, to unroll a loop, the reference teaches and suggests identifying and classifying loops, specifically transforming “while” loops into speculative counted loops.

In contrast, Applicants’ claimed invention recites features of executing computer programs and interpreting byte codes of the computer programs. Each of the byte codes is counted during execution, and the byte code is compiled to create unrolled loops of the computer program depending on the number of times each of the byte codes is executed. Thus, the number of times each of the byte codes is executed determines whether compilation occurs. During compilation, a loop structure is unrolled to produce a plurality of loop bodies.

The transformation of “while” loops into speculatively counted loops does not provide motivation for the recitation of *interpreters* counting byte codes that *initiate compilation*. Further, identifying and classifying types of loops for loop unrolling does not teach or suggest *counting byte codes* to initiate compilation. Thus, Geva does not render obvious Applicants’ pending claims 1-20 because Geva does not teach or suggest counting interpreted byte codes to initiate compilation to unroll a loop.

Accordingly, Applicants respectfully request the withdrawal of the 35 U.S.C. § 103(a) rejection and further submit that the references singly or in combination do not render the claimed invention obvious. Applicants respectfully request a Notice of

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Response to Final Office Action mailed 6/23/04.

Allowance based on the foregoing remarks. If the Examiner has any questions concerning the present amendment, the Examiner is kindly requested to contact the undersigned at (408) 749-6900. If any other fees are due in connection with filing this amendment, the Commissioner is also authorized to charge Deposit Account No. 50-0805 (Order No. SUNMP017). A copy of the transmittal is enclosed for this purpose.

Respectfully submitted,
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